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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/535,270

02/09/2006

Rex W. Newkirk

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EXAMINER

MI, QIUWEN

ART UNIT

PAPER NUMBER

1655

NOTIFICATION DATE

DELIVERY MODE

02/19/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

karen.forgie@blakes.com

Office Action Summary	Application No. 10/535,270	Applicant(s) NEWKIRK ET AL.	
	Examiner QIUWEN MI	Art Unit 1655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

CONTINUED EXAMINATIONS

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/21/09 has been entered.

Applicant's amendment in the reply filed on 12/21/09 is acknowledged. Claims 1-20 are pending. **Claims 1-20 are examined on the merits.**

Any rejection that is not reiterated is hereby withdrawn.

Claim Rejections –35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are newly rejected under 35 U.S.C. 103(a) as being unpatentable over Siren (US 4,777,134), in view of Siren (US 4,797,390), further in view of Vanderbeke et al (US 5,554,399).

This is a new rejection necessitated by the Applicant's amendment filed on 12/21/09.

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Siren (US 4,777,134) teaches (col 9, Example 12) a 10 gram quantity of sodium phytate (from corn Sigma Chemical Co) was dissolved in 500 ml sodium acetate, buffer at pH 5.0. With the temperature increased to 37.degree. C., wheat bran (thus a plant material containing a mixture of neutral sugars with a phytase enzyme) (10 g) was added at stirring (thus an aqueous slurry). Incubation was started and continued at 37.degree. C. The dephosphorylation was followed by determining the inorganic phosphorus released. The hydrolysis was stopped by addition of 100 ml ammonia after 2 hours when 50% inorganic phosphorus had been liberated. The suspension obtained was centrifuged and the supernatant was collected (col 9, lines 42-50) (thus separating said slurry into a water soluble fraction and a water-insoluble fraction). Siren (US 4,777,134) also teaches 300 ml of the supernatant was passed through an ionexchange column (Dowex 1, chloride form, 25 mm.times.250 mm) and eluted with a linear gradient of hydrochloric acid (0-0.7N HCl). Aliquots of eluted fractions were completely hydrolyzed in order to determine the contents of phosphorus and inositol. Two fractions with the phosphorus/inositol (thus hydrolyzing the inositol phosphates in said first ionic fraction containing said mixture of neutral sugars), thus separating the hydrolyzed first ionic fraction into a second ionic fraction and a second neutral fraction which contains purified inositol) ratio of three to one (IP_3) (thus negatively charged, thus a partial hydrolysis) were collected (col 9, lines 54-62). According to the invention a procedure where a material containing $IP_{sub.6}$ is used is preferred as mentioned before. Then $IP_{sub.6}$ is broken down enzymatically to $IP_{sub.3}$ with phytase enzyme. Phytase enzyme is normally present in all inositolphosphate containing plants and seeds. Because of this it is, according to the invention, usually not necessary to add the enzyme if a natural product is used as starting material (col 3, lines 8-16). Even though Siren

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(US 4,777,134) does not explicitly teach adding phytase enzyme into the mixture in Example 12, as evidenced by Siren (US 4,777,134), phytase enzyme is normally present in all inositolphosphate containing plants and seeds, thus the wheat bran contains phytase enzyme, and the hydrolysis products of IP₃, inositol and phosphorus are the evidence of the presence of phytase enzyme.

Siren (US 4,777,134) does not teach the phytase enzyme includes acid phosphatase, the hydrolysis carried out at a pH of less than 4, separating the slurry into a water-soluble fraction and an insoluble fraction carried out by filtration, or hydrolyze inositol phosphates in first ionic fraction with acid phosphatase or phytase.

Siren (US 4,797,390) teaches that according to the invention a procedure where the above mentioned higher inositol phosphate IP.sub.6, IP.sub.5 and/or IP.sub.4 are broken down enzymatically to IP.sub.3 with phytase enzyme, for instance, is preferred. Phytase enzyme is normally present in all inositol phosphate containing plants and seeds. Because of this it is, according to the invention, usually not necessary to add the enzyme if a natural product is used as starting material. In the cases where the natural product has too low an enzymatic activity or when IP.sub.6, IP.sub.5 or IP.sub.4 or a mixture of these is used as starting material, a phytase enzyme, for example, from bran is added (page 4, lines 25-38). Siren (US 4,797,390) also teaches the content of the peak with the ratio of phosphorus to inositol of six to one was precipitated by addition of calciumhydroxide. The precipitate was filtered, washed and mixed with 10 ml of a cation-exchange resin to give the acid form of the inositolhexaphosphate. After neutralization with sodium hydroxide and freeze-drying the sodium salt of D-chiro-inositolhexaphosphate was obtained.

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Vanderbeke et al teach an enzyme composition having a synergetic phytate hydrolyzing activity comprising a phytase having phytate hydrolyzing activity at a pH of from 2.5 to 5.0 and an acid phosphatase having phytate hydrolyzing activity at a pH of 2.5, in a low ratio corresponding to a pH 2.5/5.0 activity profile of from 0.8/1.0 to 3/1. Said enzyme composition preferably displays a higher synergetic phytate hydrolyzing efficiency through thermal treatment (see Abstract). Vanderbeke et al also teach by using a mixture of acid phosphatase and phytase instead of phytase as sole enzyme, plant phytin hydrolysis is improved, not solely as a result of a higher thermostability of this enzyme mixture, but mainly as a result of an improved synergetic interaction between both enzymes as the ratio pH 2.5/5.0 phytate hydrolyzing activity will increase by the different thermal degradation of both enzymes (col 5, lines 60-67). Vanderbeke et al further teach most preferably the treatment is carried out at a pH of about 2.5 (thus less than 4).

It would have been *prima facie* obvious for one of ordinary skill in the art at the time the invention was made to either use the phytase enzyme that is normally present in all inositol phosphate containing plants and seeds to hydrolyze the inositol phosphates in the first ionic fraction, or newly add a phytase enzyme to hydrolyze the inositol phosphates from Siren (US 4,797,390) since Siren (US 4,797,390) teaches higher inositol phosphate IP.sub.6, IP.sub.5 and/or IP.sub.4 are broken down enzymatically to IP.sub.3 with phytase enzyme either naturally contained in the plants and seeds or freshly added when the enzyme level is low. It would also have been *prima facie* obvious for one of ordinary skill in the art at the time the invention was made to use filtration to separate the slurry into a water-soluble fraction and an insoluble fraction

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as evidenced by Siren (US 4,797,390), filtration is a routine operation that is used in phytate hydrolyzation process.

It would also have been *prima facie* obvious for one of ordinary skill in the art at the time the invention was made to include acid phosphatase with phatase from Vanderbeke et al to hydrolyze phytate, phytic acid, phytin or inositol phosphates since Vanderbeke et al teach the enzyme composition displays a higher synergetic phytate hydrolyzing efficiency. It would also have been *prima facie* obvious for one of ordinary skill in the art at the time the invention was made to treat the aqueous slurry at pH less than 4, since Vanderbeke et al teach preferably the treatment is carried out at a pH of about 2.5.

Since all the references yielded beneficial results in hydrolyzing phytate in plant materials, one of ordinary skill in the art would have been motivated to make the modifications to combine the references together.

From the teachings of the references, it is apparent that one of the ordinary skills in the art would have had a reasonable expectation of success in producing the claimed invention.

Thus, the invention as a whole is *prima facie* obvious over the references, especially in the absence of evidence to the contrary.

Applicant's arguments, regarding the Examples 22 and 25 in Siren (US 4,734,283) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of Siren (US 4,777,134).

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qiuwen Mi whose telephone number is 571-272-5984. The examiner can normally be reached on 8 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terry McKelvey can be reached on 571-272-0775. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Qiuwen Mi/

Examiner, Art Unit 1655